REMARKS

In the Office Action the examiner notes that claims 1-3 are pending in the application. By this amendment, no claims have amended or canceled, therefore, claims 1-3 remain pending in the application.

Drawings

The drawings stand objected to as failing to comply with 37 CFR 1.84 (P)(5) because they do not include reference signs mentioned in the description. In response the applicant has amended both Fig.2 of the drawings and the description to correct this error. A marked-up version of Fig.2 is enclosed, with changes shown in red ink, for the Examiner's approval. Accordingly, the applicant respectfully submits that the drawing objections are now moot.

Specification

The abstract was objected to as containing over 150 words. In response, the applicant has enclosed, on a separate sheet, a revised abstract for the Examiner's approval.

The title also stands objected to as not being descriptive. In response, the applicant has amended the title to be more descriptive.

The disclosure stands objected to for containing minor informalities. The informalities relate to the use of incorrect reference numerals and typos. In response, the applicant has amended the disclosure to correct each of the informalities.

Claim Rejections - 35 USC Section 103(a)

Claims 1 and 3 stand rejected under 35 USC Section 103(a) as being unpatentable over Ueda (U.S. Patent No. 5,856,725; "Ueda") in view of Simpson et al. (U.S. Patent No. 5,730,887; "Simpson").

Claim 1 recites a shadow mask having a plurality of slots forming beam spots, each having substantially a rectangular shape, uniformly on a florescent surface of a color braun tube. The slots include a slot having substantially a rectangular shape and formed at a portion near an

axis of ordinate passing a central portion of the shadow mask, and a curved slot formed on an outer peripheral side apart from the access of ordinate.

The rectangular slot includes a back side opening, formed on an electron beam incident side to have substantially rectangular shape, and a front side opening also having a substantially rectangular shape that also has a large area.

The curved slot is composed of a backside opening formed on the electron beam incident side to be curved such that both longitudinal end portions thereof are apart from the axis of ordinate. The curved slot also has a front side opening having a substantially rectangular shape. The curving of the backside opening becomes large as both the longitudinal end portions are apart from the access of ordinate.

For the combination of Ueda and Simpson to render claim 1 unpatentable, the Office Action must establish that the combination discloses all of the elements of claim 1. In addition, the Office Action must provide some reason, suggestion, or motivation in the art that would compel one of ordinary skill in the art to combine the two references. The applicant respectfully submits that the Office Action fails in both of these respects.

Even if Ueda and Simpson were combined, as the Office Action suggests, the disclosed combination would not set forth all of the elements of claim 1. Specifically, Ueda discloses a shadow mask having rectangular openings of composed of a backside opening 26S and a front side opening 26L. The front side openings 26L are larger than the backside openings 26S. The front side openings 26L are located facing the screen and the backside openings 26S face the electron beam, or in other words, are on the electron beam incident side.

Simpson discloses a shadow mask 25 having a plurality of apertures. Certain apertures 43 are formed on an outer periphery of the shadow mask 25. These apertures 43 are each composed of a backside circular opening 44 on the electron beam incident side and front side elliptical opening 45, facing the screen. The front side openings are larger than the backside openings.

The examiner asserts that if the teaching related to the elliptical front side openings 45 of Simpson were applied to the shadow mask of Ueda, the curved slots of the claimed invention

would result. The applicant respectfully disagrees. If the front side openings 26L of Ueda were altered to have the elliptical shape of the front side openings of Simpson, the claimed invention would not result. This is because the front side openings of claim 1 are formed to "have substantially a rectangular shape" (Claim 1, line 18). Therefore, if the teachings of Simpson were applied to Ueda as the examiner suggests, the claimed invention would not result because all of the features disclosed therein would not result.

Claims 2 and 3 are dependant, either directly or indirectly, on claim 1. Since dependant claims necessarily include all of the limitations of their base claims and any intervening claims. the applicant respectfully submits that claims 2 and 3 are allowable for least the same reasons given with respect to claim 1.

Conclusion

In view of the aforesaid, the applicant respectfully submits that the present application is in condition for allowance. Favorable reconsideration is hereby requested.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Takeshi et al.	)	SHADOW MASK FOR BRAUN TUBE
Serial No.: 09/646,992	)	Attorney Docket: TJK/117
Filed: September 25, 2000	)	Group Art Unit: 2879
	)	Examiner: German Colon

Assistant Commissioner for Patents
Washington, D.C. 20231

VERSION SHOWING MARKINGS TO SPECIFICATION

On page 1, please replace the second full paragraph, starting with "Fig.6 is a general..." with the following paragraph:

--Fig.6 is a general view of a shadow mask for a color Braun tube having a plurality of slots each in substantially a rectangular shape. A conventional shadow mask 61 is composed of a slot forming portion 62 and a skirt forming portion 63. An electron beam passing a slot enters directly linearly into the slot at a central portion S of the shadow mask, but it enters obliquely to the slot as directed to an outer peripheral portion thereof. For this reason, a front side opening and a back side opening of the slot of the conventional shadow mask are adjusted in the opening forming positions thereof.--

On pages 3 and 4, please replace the first full paragraph, starting with "Figs.8 to 10 are..." on page 3 and concluding with page 4, with the following paragraph:

--Figs. 8 to 10 are schematic views for explaining such problem. Fig.8(i) is a view showing the shape of the slot formed at the R point on the X-axis of coordinate shown in Fig.6, in which the front side opening 72 is formed through the etching working with the back side opening [73] 71 being shifted from the front side opening 72. The electron beam 73 passing through the central portion A of the slot can pass, with a desired width W as shown if Fig.8(ii), a portion between side wall sections 83 and 84 to which thin steps 81 and 82 are formed through

the sufficient etching process. On the other hand, the electron beam 73 passing through the upper end portion B in the longitudinal direction of the slot is shut off by a step 86, having a large thickness, formed to a side wall section 88, which is not subjected to the sufficient etching process, as shown by the sectional view of Fig.8(iii), and hence, this electron beam 73 cannot pass with the desired width W. As mentioned above, the difference of the shapes of the side wall sections, particularly, the thicknesses of the steps are the ventral portion A and the longitudinal upper end portion B resides in the difference in the etching progressing g speeds caused by the positional relationship between the front side opening 72 and the back side opening 71. That is, at the central portion A of the slot, the etching progressing speed is large (high) and this portion is etched with a sufficient speed to thereby form the thin steps 81 and 82. On the other hand, at the upper end portion B, the etching progressing speed is small (low) and this portion is not sufficiently etched, so that the etching progresses from the back side opening 71 having a small opening width and, hence, the steps 85 and 88 having large thickness are formed. As a result, a spot of the electron beam passing the slot and landing on the fluorescent surface provides a curved shape in which upper and lower end portions of a boundary line of the outer peripheral side of [he] the Braun tube because the incident electron beam 73 is shut off by the thickened step 86 formed to the side wall section 88 on the outer peripheral side which is not subjected to the sufficient etching working.--

On page 12, please replace the second full paragraph, starting with "As shown in Fig.2(i)..." with the following paragraph:

--As shown in Fig.2(i), the slot of the point P has the back side opening 1 and the front side opening 2 having the same shapes as those of the slot of the point S shown in Fig.1. The front side opening 2 is formed so as to be shifted towards the outer peripheral side of the shadow mask with respect to the back side opening 1 so as not to obstruct the passing of the electron beam [8] 9 entering obliquely to the slot. Since the slot of the point P exists on the Y-axis of coordinate, the center M of the front side opening 2 and the center N of the back side opening 1 are coincident with each other. As shown in Figs. 2(ii) and (iii), the side wall sections 3 and 4 formed through the etching working have the shapes symmetric with each other.--

On pages 13 and 14, please replace the third full paragraph, starting with "As shown in the sectional..." on page 13 and concluding on page 14, with the following paragraph:

--As shown in the sectional view of Fig.3(ii), the etching progresses at a high speed at the central portion of the slot, so that the thicknesses H and h of the steps 35 and 36 formed respectively to the side wall sections 3 and 4 are made thin. However, since the opening center M of the front side opening 2 is shifted towards the outer peripheral side of the shadow mask, the thickness H of the step 35 formed to the side wall section 3 on the central side of the shadow mask is larger than the thickness h of the step 36 formed to the side wall section 4 on the outer peripheral side. As mentioned above, the electron beam 31 incident obliquely to the C1-C1 section of the slot formed through the etching working passes the slot with the width W which is determined by the end face edge 37 of the back side opening 11 on the central side of the shadow mask and the step 36 of the side wall section 4 on the outer peripheral side thereof. The width W of the electron beam 31 at this time becomes equal to the width W between [the] steps 15 and 16 formed to the rectangular slot shown in [Figs.1 and 2] Fig.1.--

On pages 14 and 15, please replace the first full paragraph, starting with "As shown in the sectional view..." on page 14 and concluding on page 15, with the following paragraph:

--As shown in the sectional view of Fig.3(iii), since the etching progresses at a slightly reduced speed at the lower end portion of the slot, the etching progresses from the back side opening 11 and its depth is slightly made large instead that the etching depth from the front opening 2 is made small. As a result, the thickness H and h of the respective steps 35 and 36 of the side wall section 3 are made thick respectively more than that in the case shown in Fig.3(ii), and the etching opening area of the back side opening 11 is made slightly large. However, the positions of coordinate of the end face edge 37 of the back side opening 11 on the central side of the shadow mask is substantially equal to the position of coordinate of the end face edge shown in Fig.3(ii). Likely, the position of coordinate of the step 36 of the side wall section 4 on the outer peripheral side of the shadow mask has the same position of coordinate which is shifted, in the depth direction, from the position of the coordinate of the step 36 shown in Fig.3(ii). As mentioned above, the electron beam 31 incident from the oblique direction to the C2-C2 section

of the etched slot passes the slot with the width W which is determined by the end face edge 37 of the back side opening 11 on the central side of the shadow mask and the step 36 of the side wall section 4 on the outer peripheral side thereof. In spite of the fact that the position at which the back side opening 11 of the C2-C2 section is formed is on the side near the opening center M of the front side opening 2 rather than the C1-C1 section, the width W of the passing electron beam 31 becomes equal to the width W between the steps 15 and 16 of the rectangular slot shown in [Figs. 1 and 2] Fig.1 and then the width of the electron beam passing the section of Fig.3(ii) and the position of coordinate are coincident.--

On pages 15 and 16, please replace the first full paragraph, starting with "As shown in the sectional view of Fig.3(iv)..." on page 15 and concluding on page 16, with the following paragraph:

--As shown in the sectional view of Fig.2(iv), since the etching progresses at a slow speed at the lower end portion of the slot, the etching progresses from the back side opening 11 and its depth is made large instead that the etching depth from the front opening 2 is made further small. As a result, the thicknesses H and h of the respective steps 35 and 36 of the side wall section 3 are made thick respectively more than in the case shown in Fig.3(ii), and the etching opening area of the back side opening 11 of the central side of the shadow mask is made further large. However, the position of coordinate of the end face edge 37 of the back side opening 11 on the central side of the shadow mask is substantially equal to the position of coordinate of the end face edge shown in Figs.3(ii) and 3(iii). Likely, the position of coordinate of the step 36 of the side wall section 4 on the outer peripheral side of the shadow mask has the same position of coordinate which is shifted upward from the position of the coordinate of the step 36 shown in Fig.3(ii) and (iii). As mentioned above, the electron beam 31 incident from the oblique direction to the C3-C3 section of the etched slot passes the slot with the width W which is determined by the end face edge 37 of the back side opening 11 on the central side of the shadow mask and the step 36 of the side wall section 4 on the outer peripheral side thereof. In spite of the fact that the position at which the back side opening 11 of the C3-C3 section is formed is on the side further near the opening center M of the front side opening 2 rather than the C2-C2 section, the width W of the passing electron beam 31 becomes equal to the width W

between the steps 15 and 16 of the rectangular slot shown in [Figs. 1 and 2] Fig.1 and then, the width of the electron beam passing the sections of Figs.3(ii) and (iii) and the position of coordinate are coincident.--